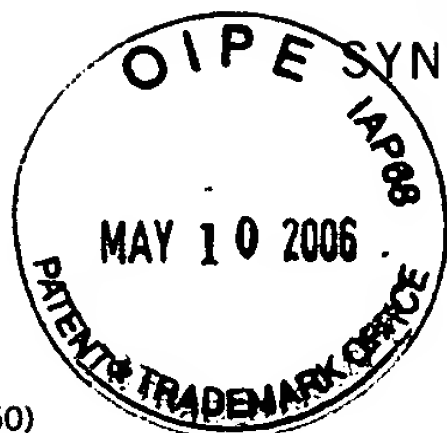


ALEXIS BARRON
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OF COUNSEL

PAUL SYNNESTVEDT (1897-1950)
HARVEY LECHNER (1909-1954)



Intellectual Property Law

May 8, 2006

GENE J. YAO
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MARC S. SEGAL
JONATHAN M. DERMOTT, PH.D.

PETER D. MLYNEK, PH.D.
JOHN R. BRANCOLINI
PATENT AGENTS

*ADMITTED ONLY IN NY

Ms. Wynette Stapor
Ms. Linda Hodge-Taylor
USPTO- Reconstruction Files
500 Dulany Street-Jefferson Building
Room 4C35/8A77
Alexandria, VA 22313

VIA FEDERAL EXPRESS

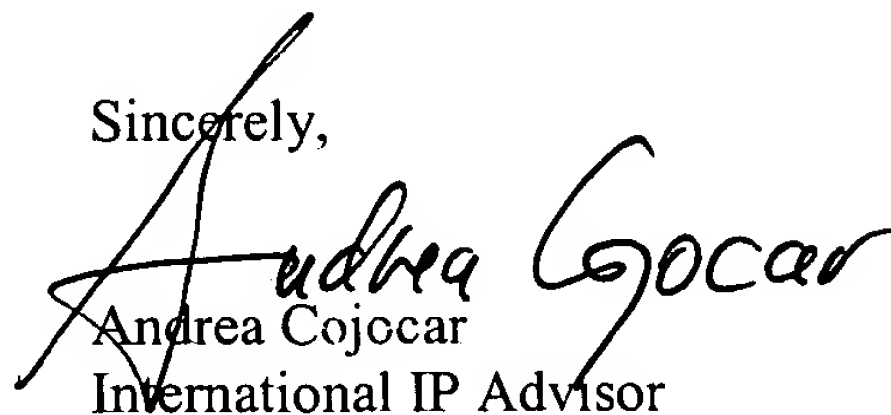
Re: Application Serial No. 09/966,204
S&L File No. P-26,643 USA

Dear Ms. Stapor:

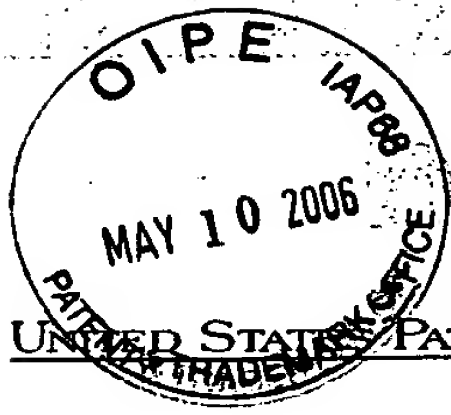
Further to your March 30, 2006 facsimile to our offices, please find enclosed the copies of the documents you requested.

Please do not hesitate to contact Mr. Mark Simpson or me if you have any questions or if you need any additional documents.

Sincerely,


Andrea Cojocar
International IP Advisor

/axc
Enclosures



AK

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/966,204 | 09/28/2001 | Yanling Sun | 2 | 4442 |

7590 12/04/2002
Docket Administrator
Agere Systems Inc.
P.O. Box 614
Berkeley Heights, NJ 07922-0614

11

EXAMINER

NGUYEN, JOHN B

ART UNIT PAPER NUMBER

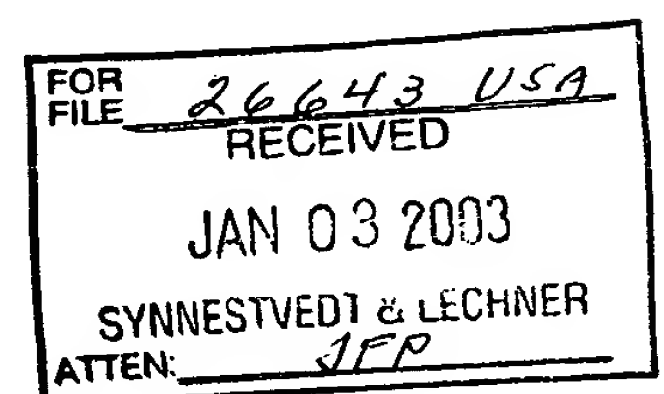
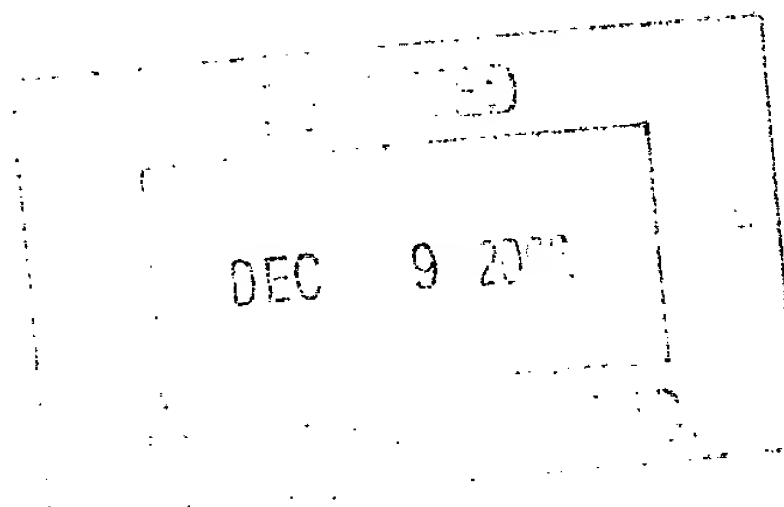
2819

DATE MAILED: 12/04/2002

ENTERED COMPUTER
3-4-03

Due 3/4/02

Please find below and/or attached an Office communication concerning this application or proceeding.





Office Action Summary

Application No.

09/966,204

Applicant(s)

SUN, YANLING

Examiner

John B Nguyen

Art Unit

2819

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Welland (U.S. Patent No. 6,327,463 B1).

Regarding to claim 1, Welland et al. discloses Phase-locked loop circuit (Figure 2) comprising: a voltage-controlled oscillator (Figure 2, 212) which includes at least one resonator circuit (Figure 3 and Figure 4) for driving the oscillator; a phase-locked loop including frequency control means (ABSTRACT) for controlling the output frequency of said oscillator, such that during operation said resonator circuit runs at a resonator frequency to drive said oscillator at an oscillator output frequency which is an integer multiple of the resonator frequency (column 7, lines 45-67; column 8, lines 1-60); wherein the resonator frequency is coupled to the frequency control means of the phase-locked loop, in that the resonator circuit includes at least one adjustable component to control the resonator frequency and in that the phase-locked loop frequency control means are coupled to the resonator circuit for controlling the resonator frequency (Figure 4 and 5, column 8, lines 17-65; column 9, lines 33 +..) as claim 1 discloses.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 2819

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Welland (U.S. Patent No. 6,327,463 B1) in view of Mucke et al. (U.S. Patent No. 6,268,778 B1).

Regarding to claims 5, 6 and 8, Welland Discloses Phase-locked loop (Figure 2) comprising: a resonator (figure 4), wherein the resonator circuit comprise LC circuits with at least one variable capacitor (figure 4, 402,406). However, Welland fails to show a VCO comprises a push-push circuit, a pair of resonator circuit, a pair of substantially identical active devices, respectively.

Regarding to claims 2-4, 7 and 9, Figures 1(100) Mucke et al. disclosed a Voltage-controlled oscillator (VCO) comprises a push-push circuit (112); a pair of resonator circuits (combine each set of 102,104); a pair of substantially identical active devices (136,138). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the device of Mucke et al. to the device of Welland for the purpose of a balanced circuit in which two active devices oscillate at the fundamental frequency 180 degree out of phase and in which even harmonic signals are generated in phase.

Conclusion

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. (See enclosed Form PTO-892).

Application/Control Number: 09/966,204

Page 4

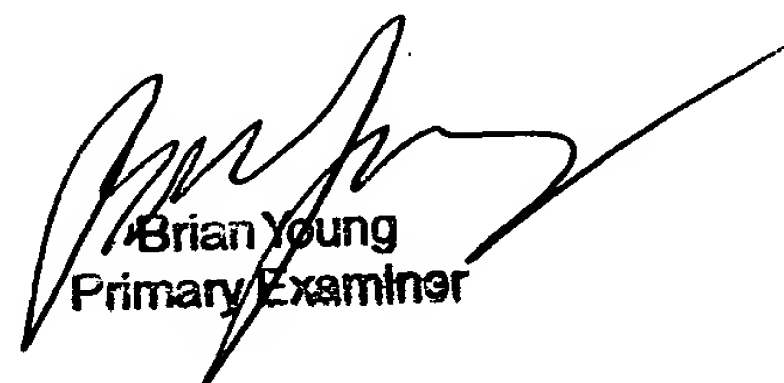
Art Unit: 2819

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John B Nguyen whose telephone number is (703) 308-6039. The examiner can normally be reached on 8AM-4: 30 PM M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Tokar can be reached on (703) 305-3493. The fax phone number for the organization where this application or proceeding is assigned is (703) 308-7722

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

John B. Nguyen
November 25, 2002



Brian Young
Primary Examiner



Form PTO 948 (Rev. 03/01)

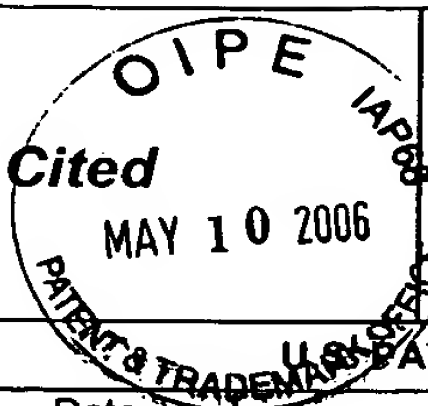
U.S. DEPARTMENT OF COMMERCE - Patent and Trademark Office

Application No.

09/966,204NOTICE OF DRAFTSPERSON'S
PATENT DRAWING REVIEWThe drawing(s) filed (insert date) 09/28/01 are:A. ☐ approved by the Draftsperson under 37 CFR 1.84 or 1.152.B. ☒ objected to by the Draftsperson under 37 CFR 1.84 or 1.152 for the reasons indicated below. The Examiner will require submission of new, corrected drawings when necessary. Corrected drawing must be submitted according to the instructions on the back of this notice.

1. DRAWINGS. 37 CFR 1.84(a): Acceptable categories of drawings:
Black ink. Color.
____ Color drawings are not acceptable until petition is granted.
Fig(s) _____
____ Pencil and non black ink not permitted. Fig(s) _____
2. PHOTOGRAPHS. 37 CFR 1.84(b)
____ 1 full-tone set is required. Fig(s) _____
____ Photographs may not be mounted. 37 CFR 1.84(e)
____ Poor quality (half-tone). Fig(s) _____
3. TYPE OF PAPER. 37 CFR 1.84(e)
____ Paper not flexible, strong, white, and durable.
Fig(s) _____
____ Erasures, alterations, overwritings, interlineations,
folds, copy machine marks not accepted. Fig(s) _____
____ Mylar, velum paper is not acceptable (too thin).
Fig(s) _____
4. SIZE OF PAPER. 37 CFR 1.84(f): Acceptable sizes:
____ 21.0 cm by 29.7 cm (DIN size A4)
____ 21.6 cm by 27.9 cm (8 1/2 x 11 inches)
____ All drawing sheets not the same size.
Sheet(s) _____
____ Drawings sheets not an acceptable size. Fig(s) _____
5. MARGINS. 37 CFR 1.84(g): Acceptable margins:
Top 2.5 cm Left 2.5 cm Right 1.5 cm Bottom 1.0 cm
SIZE: A4 Size
Top 2.5 cm Left 2.5 cm Right 1.5 cm Bottom 1.0 cm.
SIZE: 8 1/2 x 11
Margins not acceptable. Fig(s) _____
____ Top (T) _____ Left (L) _____
____ Right (R) _____ Bottom (B) _____
6. VIEWS. 37 CFR 1.84(h)
REMINDER: Specification may require revision to
correspond to drawing changes.
Partial views. 37 CFR 1.84(h)(2)
8. ARRANGEMENT OF VIEWS. 37 CFR 1.84(i)
____ Words do not appear on a horizontal, left-to-right fashion
when page is either upright or turned so that the top
becomes the right side, except for graphs. Fig(s) _____
9. SCALE. 37 CFR 1.84(k)
____ Scale not large enough to show mechanism without
crowding when drawing is reduced in size to two-thirds in
reproduction.
Fig(s) _____
10. CHARACTER OF LINES, NUMBERS, & LETTERS.
37 CFR 1.84(i)
☒ Lines, numbers & letters not uniformly thick and well
defined, clean, durable, and black (poor line quality).
Fig(s) 1-3
11. SHADING. 37 CFR 1.84(m)
____ Solid black areas pale. Fig(s) _____
____ Solid black shading not permitted. Fig(s) _____
____ Shade lines, pale, rough and blurred. Fig(s) _____
12. NUMBERS, LETTERS, & REFERENCE CHARACTERS.
37 CFR 1.84(p)
____ Numbers and reference characters not plain and legible.
Fig(s) _____
____ Figure legends are poor. Fig(s) _____
____ Numbers and reference characters not oriented in the
same direction as the view. 37 CFR 1.84(p)(1)
Fig(s) _____
____ English alphabet not used. 37 CFR 1.84(p)(2)
Figs _____
____ Numbers, letters and reference characters must be at least
.32 cm (1/8 inch) in height. 37 CFR 1.84(p)(3)
Fig(s) _____
13. LEAD LINES. 37 CFR 1.84(q)
____ Lead lines cross each other. Fig(s) _____
____ Lead lines missing. Fig(s) _____

Notice of References Cited



Application/Control No.

09/966,204

Applicant(s)/Patent Under Reexamination
SUN, YANLING

Examiner

John B Nguyen

Art Unit

2819

Page 1 of 1

U.S. PATENT DOCUMENTS

| * A | Document Number Country Code-Number-Kind Code | Date MM-YYYY | Name | Classification |
|-----|--|-----------------|-----------------|----------------|
| A | US-00-6,327,463 B1 | 12-2001 | Welland | 455/260 |
| B | US-00-6,268,778 B1 | 07-2001 | Mucke et al. | 331/117R |
| C | US-00-6,326,854 B1 | 12-2001 | Nicholls et al. | 331/56 |
| D | US-00-5,650,754 | 07-1997 | Joshi et al. | 331/36C |
| E | US- | | | |
| F | US- | | | |
| G | US- | | | |
| H | US- | | | |
| I | US- | | | |
| J | US- | | | |
| K | US- | | | |
| L | US- | | | |
| M | US- | | | |

FOREIGN PATENT DOCUMENTS

| * N | Document Number Country Code-Number-Kind Code | Date MM-YYYY | Country | Name | Classification |
|-----|--|-----------------|----------------|--------------|----------------|
| N | GB-2 361 122 A | 10-2001 | United Kingdom | Moshe et al. | H03C 3/22 |
| O | | | | | |
| P | | | | | |
| Q | | | | | |
| R | | | | | |
| S | | | | | |
| T | | | | | |

NON-PATENT DOCUMENTS

| * U | Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages) |
|-----|---|
| U | |
| V | |
| W | |
| X | |

copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).) Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

INVENTORS: Yanling Sun

APPLICATION NO. 09/966,204

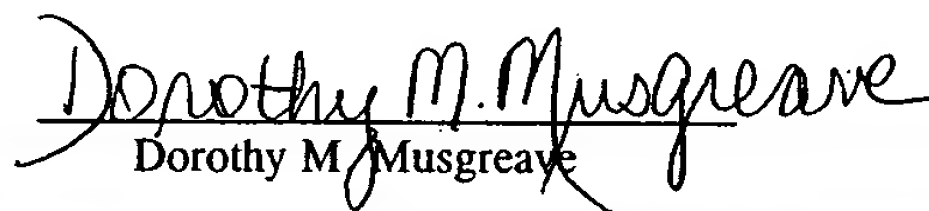
FILED: September 28, 2001

CASE: Sun 2 (S&L File No. P 26,643 USA)

TITLE: Phase-Locked Loop Circuit As Well As A Voltage-Controlled Oscillator as Used In a Phase-Locked Loop Circuit

Certificate of Mailing

I certify that this document and fee is being deposited with the U.S. Postal Service as first class mail, postage prepaid, in an envelope addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on October 2, 2003.


Dorothy M. Musgreave

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Information Disclosure Statement
Pursuant to 37 C.F.R. §§1.56, 1.97 and 1.98

Sir:

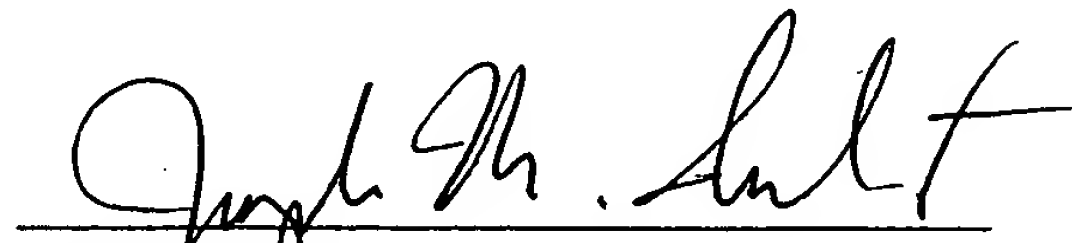
Pursuant to Applicant's duty of disclosure set forth in 37 CFR §§1.56, 1.97 and 1.98, the following information is disclosed to aid the Examiner in his or her examination of the application. The inclusion of information in this Disclosure Statement and as set forth on the attached Forms PTO-1449 is not necessarily a concession that such information is prior art to the present invention or that such information is in an art area analogous to the present

invention. Copies of the publications listed on the attached Forms PTO-1449 are submitted herewith.

It is respectfully requested that the Examiner initial Forms PTO-1449 and return a copy of same upon consideration of these publications.

Respectfully submitted,

Date 10-2-2003

A handwritten signature in black ink, appearing to read "Joseph M. Imhof", written over a horizontal line.

Joseph M. Imhof

Reg. No. 41,863

Synnestvedt & Lechner LLP

2600 Aramark Tower

1101 Market Street

Philadelphia, PA 19107-2950

(215) 923-4466

Complete if Known

(use as many sheets as necessary)

Sheet 1 of 2

| | |
|------------------------|--------------------|
| Application Number | 09/966,204 |
| Filing Date | September 28, 2001 |
| First Named Inventor | Yanling Sun |
| Art Unit | 2819 |
| Examiner Name | John B. Nguyen |
| Attorney Docket Number | P26.643 USA |

[illegible][illegible]

**Examiner
Signature**

Date
Considered

¹ Applicant's unique citation designation number (optional). ² See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶ Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. **DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.



U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

and to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449B/PTO

Co. Delete if Known

(use as many sheets as necessary)

Sheet

2

of

2

Application Number

09/966,204

Filing Date

September 28, 2001

First Named Inventor

Yanling Sun

Group Art Unit

2819

Examiner Name

John B. Nguyen

Attorney Docket Number

P26,643 USA

OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS

**Examiner
Signature**

Date _____

Considered

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Applicant's unique citation designation number (optional). ² Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 120 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. **DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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NOTICE OF ALLOWANCE AND FEE(S) DUE

7590

07/02/2003

Docket Administrator
Agere Systems Inc.
P.O. Box 614
Berkeley Heights, NJ 07922-0614

ENTERED COMPUTER

Dwg: 10-2-03

EXAMINER

NGUYEN, JOHN B

ART UNIT

CLASS-SUBCLASS

2819

331-11700R

DATE MAILED: 07/02/2003

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/966,204 | 09/28/2001 | Yanling Sun | 2 | 4442 |

TITLE OF INVENTION: PHASE-LOCKED LOOP CIRCUIT AS WELL AS A VOLTAGE-CONTROLLED OSCILLATOR AS USED IN A PHASE-LOCKED LOOP CIRCUIT

| APPLN. TYPE | SMALL ENTITY | ISSUE FEE | PUBLICATION FEE | TOTAL FEE(S) DUE | DATE DUE |
|----------------|--------------|-----------|-----------------|------------------|------------|
| nonprovisional | NO | \$1300 | \$300 | \$1600 | 10/02/2003 |

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON REQUEST BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE REFLECTS A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE APPLIED IN THIS APPLICATION. THE PTOL-85B (OR AN EQUIVALENT) MUST BE RETURNED WITHIN THIS PERIOD EVEN IF NO FEE IS DUE OR THE APPLICATION WILL BE REGARDED AS ABANDONED.

HOW TO REPLY TO THIS NOTICE:

Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

If the status is the same, pay the TOTAL FEE(S) DUE shown above.

If the status is changed, pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above and notify the United States Patent and Trademark Office of the change in status, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check the box below and enclose the PUBLICATION FEE and 1/2 the ISSUE FEE shown above.

☐ Applicant claims SMALL ENTITY status.
See 37 CFR 1.27.

PART B - FEE(S) TRANSMITTAL should be completed and returned to the United States Patent and Trademark Office (USPTO) with the ISSUE FEE and PUBLICATION FEE (if required). Even if the fee(s) have already been paid, Part B - Fee(s) Transmittal should be completed and returned. If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted.

All communications regarding this application must give the application number. Please direct all communications prior to issuance to the ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

| | |
|-----------------------|-----------|
| FOR FILE | 26643 USA |
| RECEIVED | |
| JUL 10 2003 | |
| SYNNESTVEDT & LECHNER | |
| ATTEN: | RRA |

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: **Mail Stop ISSUE FEE**
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CURRENT CORRESPONDENCE ADDRESS (Note: Legibly mark-up with any corrections or changes.)

7590

07/02/2003

Docket Administrator
 Agere Systems Inc.
 P.O. Box 614
 Berkeley Heights, NJ 07922-0614



Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Box Issue Fee address above, or being facsimile transmitted to the USPTO, on the date indicated below.

(Depositor's name)

(Signature)

(Date)

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/966,204 | 09/28/2001 | Yanling Sun | 2 | 4442 |

TITLE OF INVENTION: PHASE-LOCKED LOOP CIRCUIT AS WELL AS A VOLTAGE-CONTROLLED OSCILLATOR AS USED IN A PHASE-LOCKED OOP CIRCUIT

| APPLN. TYPE | SMALL ENTITY | ISSUE FEE | PUBLICATION FEE | TOTAL FEE(S) DUE | DATE DUE |
|----------------|--------------|-----------|-----------------|------------------|------------|
| nonprovisional | NO | \$1300 | \$300 | \$1600 | 10/02/2003 |

| EXAMINER | ART UNIT | CLASS-SUBCLASS |
|----------------|----------|----------------|
| NGUYEN, JOHN B | 2819 | 331-11700R |

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a Customer Number is required.

2. For printing on the patent front page, list (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____
 2 _____
 3 _____

ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. Inclusion of assignee data is only appropriate when an assignment has been previously submitted to the USPTO or is being submitted under separate cover. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) ☐ individual ☐ corporation or other private group entity ☐ government

1. The following fee(s) are enclosed:

☐ Issue Fee

☐ Publication Fee

☐ Advance Order - # of Copies _____

4b. Payment of Fee(s):

☐ A check in the amount of the fee(s) is enclosed.

☐ Payment by credit card. Form PTO-2038 is attached.

☐ The Commissioner is hereby authorized by charge the required fee(s), or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

Commissioner for Patents is requested to apply the Issue Fee and Publication Fee (if any) or to re-apply any previously paid issue fee to the application identified above.

Authorized Signature)

(Date)

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This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, Alexandria, Virginia 22313-1450. **DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS.** SEND TO: Commissioner for Patents, Alexandria, Virginia 22313-1450.

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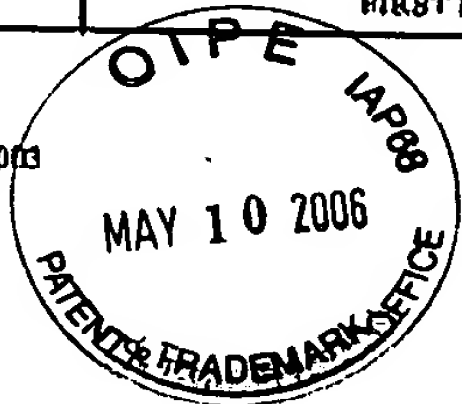
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7590 07/02/2003

Docket Administrator
 Agere Systems Inc.
 P.O. Box 614
 Berkeley Heights, NJ 07922-0614

EXAMINER
 NGUYEN, JOHN B

ART UNIT 2819 PAPER NUMBER



DATE MAILED: 07/02/2003

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
 (application filed on or after May 29, 2000)

The patent term adjustment to date is 0 days. If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the term adjustment will be 0 days.

If a continued prosecution application (CPA) was filed in the above-identified application, the filing date that determines patent term adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) system. (<http://pair.uspto.gov>)

Any questions regarding the patent term extension or adjustment determination should be directed to the Office of Patent Legal Administration at (703)305-1383.



UNITED STATES PATENT AND TRADEMARK OFFICE

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United States Patent and Trademark Office
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07/02/2003

Docket Administrator
Agere Systems Inc.
P.O. Box 614
Berkeley Heights, NJ 07922-0614
UNITED STATES



EXAMINER

NGUYEN, JOHN B

ART UNIT

PAPER NUMBER

2R19

DATE MAILED: 07/02/2003

Notice of Fee Increase on January 1, 2003

If a reply to a "Notice of Allowance and Fee(s) Due" is filed in the Office on or after January 1, 2003, then the amount due will be higher than that set forth in the "Notice of Allowance and Fee(s) Due" since there will be an increase in fees effective on January 1, 2003. See Revision of Patent and Trademark Fees for Fiscal Year 2003: Final Rule, 67 Fed. Reg. 70847, 70849 (November 27, 2002).

The current fee schedule is accessible from: <http://www.uspto.gov/main/howtofees.htm>.

If the issue fee paid is the amount shown on the "Notice of Allowance and Fee(s) Due," but not the correct amount in view of the fee increase, a "Notice to Pay Balance of Issue Fee" will be mailed to applicant. In order to avoid processing delays associated with mailing of a "Notice to Pay Balance of Issue Fee," if the response to the Notice of Allowance and Fee(s) due form is to be filed on or after January 1, 2003 (or mailed with a certificate of mailing on or after January 1, 2003), the issue fee paid should be the fee that is required at the time the fee is paid. If the issue fee was previously paid, and the response to the "Notice of Allowance and Fee(s) Due" includes a request to apply a previously-paid issue fee to the issue fee now due, then the difference between the issue fee amount at the time the response is filed and the previously paid issue fee should be paid. See Manual of Patent Examining Procedure, Section 1308.01 (Eighth Edition, August 2001).

Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at (703) 305-8283.

Notice of Allowability

Application No.

09/966,204

Examiner

John B Nguyen

Applicant(s)

SUN, YANLING

Art Unit

2819

— The MAILING DATE of this communication appears on the cover sheet with the correspondence address—
 claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included
 herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. THIS
 NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS. This application is subject to withdrawal from issue at the initiative
 of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

☐ This communication is responsive to _____.

☒ The allowed claim(s) is/are 1-9.

☐ The drawings filed on _____ are accepted by the Examiner.

☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☒ All b) ☐ Some* c) ☐ None of the:

1. ☒ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. _____.

3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the
 International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

(a) ☐ The translation of the foreign language provisional application has been received.

☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted
 above. Failure to timely comply will result in ABANDONMENT of this application. THIS THREE-MONTH PERIOD IS NOT EXTENDABLE

☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF
 INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

☒ CORRECTED DRAWINGS must be submitted.

(a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached

1) ☐ hereto or 2) ☐ to Paper No. _____.

(b) ☐ Including changes required by the proposed drawing correction filed _____, which has been approved by the Examiner.

(c) ☒ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No. 5.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of
 each sheet.

☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the
 attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Comment(s)

Notice of References Cited (PTO-802)

Notice of Draftsperson's Patent Drawing Review (PTO-948)

Information Disclosure Statements (PTO-1449), Paper No. _____

Examiner's Comment Regarding Requirement for Deposit

of Biological Material

2 ☐ Notice of Informal Patent Application (PTO-152)

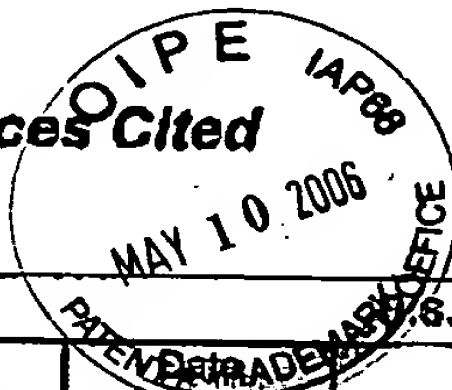
4 ☐ Interview Summary (PTO-413), Paper No. _____

6 ☐ Examiner's Amendment/Comment

8 ☒ Examiner's Statement of Reasons for Allowance

9 ☐ Other

Notice of References Cited



| | | | |
|---------------------------------------|--|--|-------------|
| Application/Control No. 09/966,204 | | Applicant(s)/Patent Under Reexamination SUN, YANLING | |
| Examiner John B Nguyen | | Art Unit 2819 | Page 1 of 1 |

U.S. PATENT DOCUMENTS

| * # | | Document Number Country Code-Number-Kind Code | Date MM-YYYY | Name | Classification |
|-----|---|--|-----------------|-----------------|----------------|
| * | A | US-00-6,327,463 B1 | 12-2001 | Welland | 455/280 |
| * | B | US-00-6,268,778 B1 | 07-2001 | Mucke et al. | 331/117R |
| * | C | US-00-6,326,864 B1 | 12-2001 | Nicholls et al. | 331/56 |
| * | D | US-00-5,850,764 | 07-1997 | Joshi et al. | 331/36C |
| | E | US- | | | |
| | F | US- | | | |
| | G | US- | | | |
| | H | US- | | | |
| | I | US- | | | |
| | J | US- | | | |
| | K | US- | | | |
| | L | US- | | | |
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FOREIGN PATENT DOCUMENTS

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| | P | | | | | |
| | Q | | | | | |
| | R | | | | | |
| | S | | | | | |
| | T | | | | | |

NON-PATENT DOCUMENTS

| # | | Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages) |
|---|---|---|
| | U | |
| | V | |
| | W | |
| | X | |

copy of this reference is not being furnished with this Office action. (See MPEP § 707.06(e).)
 ies in MM-YYYY format are publication dates. Classifications may be US or foreign.

Application/Control Number: 09/966,204

Page 2

Art Unit: 2819

DETAILED ACTION

Allowable Subject Matter

1. Claims 1-9 are allowed.

2. The following is an examiner's statement of reasons for allowance: The prior art fails to show a phase-locked-loop circuit comprising: a voltage-controlled-oscillator which includes at least one resonator circuit for driving the oscillator, wherein during operation the resonator circuit runs at a resonator frequency to drive the oscillator at an oscillator output frequency which is an integer multiple greater than one of the resonator frequency as called for in claim 1. Therefore, claims 1-9 are presently allowed.

Conclusion

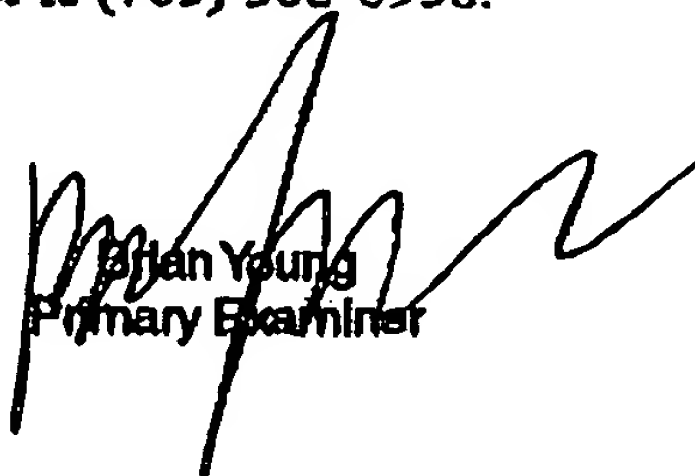
3. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John B Nguyen whose telephone number is (703) 308-6039. The examiner can normally be reached on 8AM-4:30PM M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Tokar can be reached on (703) 305-3493. The fax phone number for the organization where this application or proceeding is assigned is (703) 308-7722.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

John B. Nguyen
June 27, 2003


Brian Young
Primary Examiner



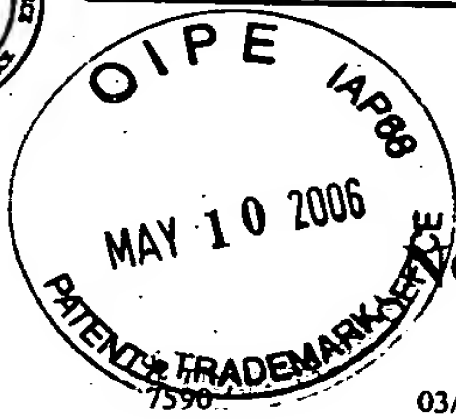
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SYNNESTVEDT & LECHNER
ATTN: JEP

EXAMINER

NGUYEN, JOHN B

ART UNIT

PAPER NUMBER

2819

DATE MAILED: 03/08/2004

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/966,204 | 09/28/2001 | Yanling Sun | 2 | 4442 |

TITLE OF INVENTION: PHASE-LOCKED LOOP CIRCUIT AS WELL AS A VOLTAGE-CONTROLLED OSCILLATOR AS USED IN A PHASE-LOCKED LOOP CIRCUIT

| APPLN. TYPE | SMALL ENTITY | ISSUE FEE | PUBLICATION FEE | TOTAL FEE(S) DUE | DATE DUE |
|----------------|--------------|-----------|-----------------|------------------|------------|
| nonprovisional | NO | \$1330 | \$300 | \$1630 | 06/08/2004 |

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. **ROSECUTION ON THE MERITS IS CLOSED.** THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN **THREE MONTHS** FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. **THIS STATUTORY PERIOD CANNOT BE EXTENDED.** SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE REFLECTS A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE APPLIED IN THIS APPLICATION. THE PTOL-85B (OR AN EQUIVALENT) MUST BE RETURNED WITHIN THIS PERIOD EVEN IF NO FEE IS DUE OR THE APPLICATION WILL BE REGARDED AS ABANDONED.

HOW TO REPLY TO THIS NOTICE:

Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

If the status is the same, pay the TOTAL FEE(S) DUE shown above.

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If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check the box below and enclose the PUBLICATION FEE and 1/2 the ISSUE FEE shown above.

☐ Applicant claims SMALL ENTITY status.
See 37 CFR 1.27.

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All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

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(Depositor's name)

(Signature)

(Date)

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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1. _____

2. _____

3. _____

ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. Inclusion of assignee data is only appropriate when an assignment has been previously submitted to the USPTO or is being submitted under separate cover. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent); ☐ individual ☐ corporation or other private group entity ☐ government

1. The following fee(s) are enclosed:

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- ☐ The Director is hereby authorized by charge the required fee(s), or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

Director for Patents is requested to apply the Issue Fee and Publication Fee (if any) or to re-apply any previously paid issue fee to the application identified above.

Authorized Signature)

(Date)

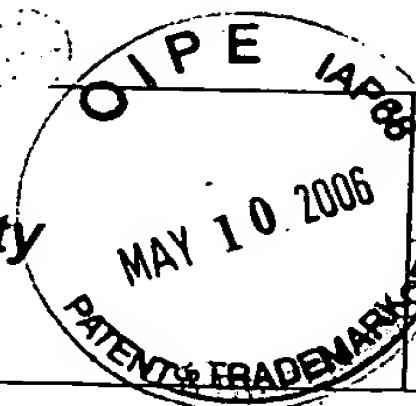
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TRANSMIT THIS FORM WITH FEE(S)

Notice of Allowability



Application No.

Applicant(s)

09/966,204

SUN, YANLING

Examiner

Art Unit

John B Nguyen

2819

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--
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- ☐ This communication is responsive to ____.
- ☒ The allowed claim(s) is/are 1-9.
- ☒ The drawings filed on 08/25/03 are accepted by the Examiner.
- ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some* c) ☐ None of the:
- ☒ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: ____.

- ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
(a) ☐ The translation of the foreign language provisional application has been received.
- ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

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☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF
ORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

☐ CORRECTED DRAWINGS must be submitted.

- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
1) ☐ hereto or 2) ☐ to Paper No. ____.
- (b) ☐ including changes required by the proposed drawing correction filed ____, which has been approved by the Examiner.
- (c) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No. 5.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of
ach sheet.

☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the
hed Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

hment(s)

Notice of References Cited (PTO-892)

Notice of Draftsperson's Patent Drawing Review (PTO-948)

Information Disclosure Statements (PTO-1449), Paper No. 11.

Examiner's Comment Regarding Requirement for Deposit

f Biological Material

2 ☐ Notice of Informal Patent Application (PTO-152)

4 ☐ Interview Summary (PTO-413), Paper No. ____.

6 ☐ Examiner's Amendment/Comment

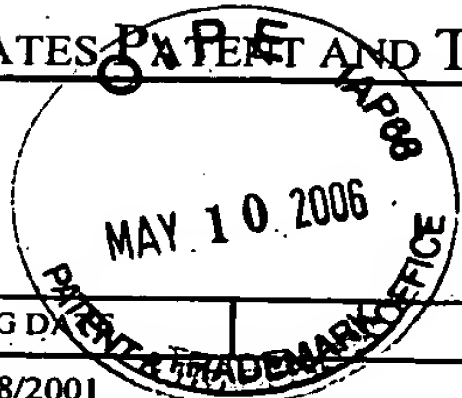
8 ☒ Examiner's Statement of Reasons for Allowance

9 ☐ Other



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|-----------------|-------------|----------------------|---------------------|------------------|
| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
| 09/966,204 | 09/28/2001 | Yanling Sun | 2 | 4442 |

Docket Administrator
Agere Systems Inc.
P.O. Box 614
Berkeley Heights, NJ 07922-0614

| |
|----------------|
| EXAMINER |
| NGUYEN, JOHN B |
| ART UNIT |
| PAPER NUMBER |

2819

DATE MAILED: 03/08/2004

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 0 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 0 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) system (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (703) 305-1383. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at (703) 305-8283.

DETAILED ACTION

Allowable Subject Matter

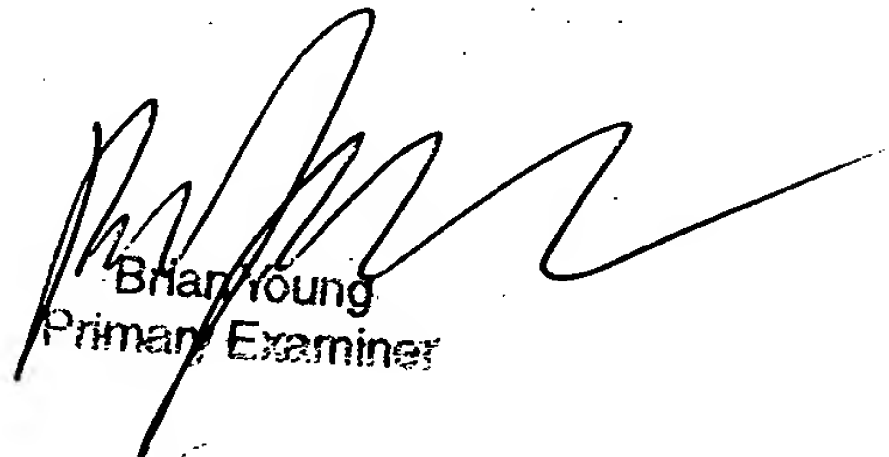
1. Claims 1-9 are allowed.
2. The following is an examiner's statement of reasons for allowance: The prior art fails to show a phase-locked-loop circuit comprising: a voltage-controlled-oscillator which includes at least one resonator circuit for driving the oscillator, wherein during operation the resonator circuit runs at a resonator frequency to drive the oscillator at an oscillator output frequency which is an integer multiple greater than one of the resonator frequency as called for in claim 1. Therefore, claims 1-9 are presently allowed.

Conclusion

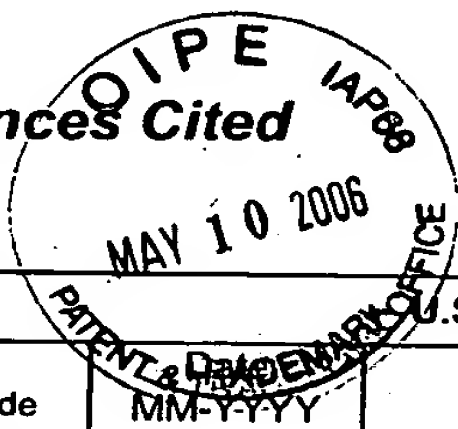
3. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John B Nguyen whose telephone number (571) 272-1808. The examiner can normally be reached on 8AM-4:30PM M-F.

John B. Nguyen
February 28, 2004


Brian Young
Primary Examiner

Notice of References Cited



Application/Control No.

09/966,204

Applicant(s)/Patent Under
Reexamination
SUN, YANLING

Examiner

John B Nguyen

Art Unit

2819

Page 1 of 1

U.S. PATENT DOCUMENTS

| | Document Number Country Code-Number-Kind Code | Date MM-YYYY | Name | Classification |
|---|--|-----------------|-----------------|----------------|
| A | US-00-6,327,463 B1 | 12-2001 | Welland | 455/260 |
| B | US-00-6,268,778 B1 | 07-2001 | Mucke et al. | 331/117R |
| C | US-00-6,326,854 B1 | 12-2001 | Nicholls et al. | 331/56 |
| D | US-00-5,650,754 | 07-1997 | Joshi et al. | 331/36C |
| E | US- | | | |
| F | US- | | | |
| G | US- | | | |
| H | US- | | | |
| I | US- | | | |
| J | US- | | | |
| K | US- | | | |
| L | US- | | | |
| M | US- | | | |

FOREIGN PATENT DOCUMENTS

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NON-PATENT DOCUMENTS

| | Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages) |
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| U | |
| V | |
| W | |
| X | |

by of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
in MM-YYYY format are publication dates. Classifications may be US or foreign.

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MAY 10 2006
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Sheet 1 of 2

Complete If Known

| | |
|------------------------|--------------------|
| Application Number | 09/966,204 |
| Filing Date | September 28, 2001 |
| First Named Inventor | Yunling Sun |
| Art Unit | 2819 |
| Examiner Name | John H. Nguyen |
| Attorney Docket Number | P26,643 USA |

U.S. PATENT DOCUMENTS

| Examiner Initials [*] | Cite No. ¹ | Document Number | | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Document | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
|--------------------------------|-----------------------|-----------------|-------------------------|--------------------------------|--|---|
| | | Number | Kind Code (if known) | | | |
| [Signature] | AA | US- 4,810,976 | | 03-07-1989 | Cowley et al. | Col. 2-5, figs. 1, 2, 5, 7 |
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FOREIGN PATENT DOCUMENTS

| Examiner Initials [*] | Cite No. ¹ | Foreign Patent Document | | | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Document | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear | T ⁶ |
|--------------------------------|-----------------------|-------------------------|------------------------|---------------------------------|--------------------------------|--|--|----------------|
| | | Office ³ | Number ⁴ | Kind ⁵ (if known) | | | | |
| [Signature] | AB | EP | 1005151 | A | 05-31-2000 | Matsushita Electric | Col. 7-12, fig. 3a- 3b, 5a, 5b, 8 | |
| | AC | | European Search Report | | 03-13-2001 | | | |
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Examiner Signature: [Signature] Date Considered: 02/28/04

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.
1 Applicant's unique citation designation number (optional). 2 See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. 3 Enter Office that issued the document by the two-letter code (WIPO Standard ST.3). For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. 4 Applicant is to place a check mark here if English language translation is attached.
This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application Serial No.09/966,204
Filing Date09/28/2001
First Named InventorYanling Sun
Assignee.....Agere Systems, Inc.
Group Art Unit.....4442
ExaminerJohn B. Nyguen
Attorney's Docket No.Sun 2 (S&L No. P26,643 USA)
TitlePhase-Locked Loop Circuit as well as a Voltage-Controlled
Oscillator as Used in a Phase-Locked Loop Circuit

RESPONSE TO OFFICE ACTION DATED DECEMBER 4, 2002

PURSUANT TO 37 C.F.R. §1.111

To: Honorable Commissioner of Patents and Trademark
P.O.Box 1450
Alexandria, VA 22313-1450

From: Joseph M. Imhof (Tel. 215-923-4466; Fax 215-923-2189)
Synnestvedt & Lechner LLP
2600 Aramark Tower, 1101 Market Street
Philadelphia, PA 19107

CERTIFICATE OF MAILING

I hereby certify that this correspondence, along with any paper indicated as being enclosed, are being deposited with the United States Postal Service as first-class mail, postage prepaid, in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on June 4, 2003.

6/4/03
Date

Dorothy M. Musgreave
Dorothy M. Musgreave

AMENDMENT

Sir:

Please amend the above-identified Application as follows:

Amendments to the Claims are reflected in the "Listing of Claims," which begin on page 2 of this paper.

Remarks begin on page 5 of this paper.

This listing of Claims will replace all prior versions, and listings, of Claims in the Application:

Listing of Claims:

1. (currently amended) Phase-locked loop circuit comprising:

a voltage-controlled oscillator which includes at least one resonator circuit for driving the oscillator;

a phase-locked loop including frequency control means for controlling the output frequency of said oscillator, such that during operation said resonator circuit runs at a resonator frequency to drive said oscillator at an oscillator output frequency which is an integer multiple greater than one of the resonator frequency;

wherein the resonator frequency is coupled to the frequency control means of the phase-locked loop, ~~in that~~ and wherein the resonator circuit includes at least one adjustable component to control the resonator frequency, ~~and in that the phase-locked loop frequency control means are coupled to the resonator circuit for controlling the resonator frequency.~~

2. (original). Phase-locked loop circuit according to claim 1, wherein the voltage-controlled oscillator comprises a push-pull circuit whose operating frequency is determined by a pair of resonator circuits and in that the frequency control means are coupled into at least one of said pair of resonator circuits.

3. (currently amended). Phase-locked loop circuit according to claim 2, wherein the push-pull circuit comprises a pair of substantially identical active devices being coupled to said resonator circuits, and in that the frequency control means comprise a phase detector which is capable of generating a an output signal which is fed back to the resonator circuits to control said active devices.

4. (original). Phase-locked loop circuit according to claim 3, wherein the active devices are field effect transistors.

5. (original). Phase-locked loop circuit according to claim 3, wherein the resonator circuits comprise LC-circuits with at least one variable capacitor in said LC-circuits being controlled by the frequency control means.

6. (currently amended). Phase-locked loop circuit according to claim 5, wherein the LC-circuits ~~comprises~~ comprise at least two variable capacitors each.

7. (original). Phase-locked loop circuit according to claim 3, wherein the active devices are each coupled in series with an inductor.

8. (original). Phase-locked loop circuit according to claim 2, wherein the resonator circuits are connected to a fixed potential via a load resistor.

9. (original). Phase-locked loop circuit according to claim 1, wherein the voltage-controlled oscillator comprises integrated components being integrated in a single semiconductor body.

REMARKS

Applicant respectfully requests reconsideration and allowance of the subject application. Claims 1-9 are pending, of which claims 1, 3, and 6 have been amended. The amendments made to claims 3 and 6 are purely to correct typographical errors noted by the Applicant, and not to overcome prior art.

Claim 1 has been amended in the interest of clarity. Claim 1, as amended, is in condition for allowance. All remaining claims depend from claim 1 and thus are also in condition for allowance.

35 U.S.C. §102 Claim Rejections

Claim 1 is rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No.6,327,463 B1, to Welland et al. (hereinafter "Welland"). With respect to claim 1 as amended, Applicant respectfully traverses the rejection.

The subject invention

The subject invention is a phase-locked loop circuit having a voltage-controlled oscillator, wherein the voltage-controlled oscillator comprises a resonator circuit. The resonator circuit drives the oscillator at an oscillator output frequency that is an integer multiple of the resonator frequency. The resonator frequency is coupled to the frequency control means of the phase-locked loop. In this manner, the phase-locked loop need only handle a fraction of the full RF output frequency of the oscillator. Thus, the need for additional frequency dividers or multipliers as found in the prior art is eliminated.

Welland

Welland teaches a method and apparatus for synthesizing high-frequency signals to limit phase noise and other signal impurities. Welland uses a phase-locked loop frequency synthesizer with a variable capacitance voltage-controlled oscillator that includes both discretely and continuously variable capacitance. The variable capacitance is used in conjunction with an LC tank oscillator circuit to drive the voltage-controlled oscillator. The discretely variable capacitance provides a coarse tuning adjustment to compensate for capacitor and inductor tolerances when adjusting the output frequency. The continuously variable capacitance provides a fine tuning adjustment to the output frequency.

The output from the voltage-controlled oscillator is fed to a frequency divider circuit (divide by N counter 214 of Fig. 2). The resulting divided signal is received by a phase detector within the phase-locked loop (202 of Fig. 2), and the divided signal is used by phase-locked loop to control its output frequency to a loop filter and then to the voltage-controlled oscillator.

Specific Rejections under 35 U.S.C. § 102

The Examiner has rejected claim 1 as being anticipated by Welland. Specifically, the Examiner states that “Welland et al. discloses a phase-locked loop circuit comprising: a voltage controlled oscillator (Fig. 2, 212) which includes at least one resonator circuit (Fig. 3 and Fig. 4) for driving the oscillator; a phase-locked loop including frequency control means (ABSTRACT) for controlling the output frequency of said oscillator, such that during operation said resonator circuit runs at a resonator frequency to drive said oscillator output frequency which is an integer multiple of the resonator frequency (col. 7, lines 45-67, col. 8, lines 1-60); wherein the resonator frequency is coupled to the frequency control means of the phase-locked loop, in that

the resonator circuit includes at least one adjustable component to control the resonator frequency and that in the phase locked loop frequency control means are coupled to the resonator circuit for controlling the resonator frequency (Fig. 4 and 5, column, lines 17-65; column 9, lines 33+..)." With respect to this rejection as applied to amended claim 1, Applicant respectfully traverses.

In order for a rejection under 35 U.S.C. §102 to be proper, each and every element of a claim must be found in the cited reference. "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." (*Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631 (Fed. Cir. 1987) M.P.E.P. §2131.

Claim 1, as amended, recites:

[a] Phase-locked loop circuit comprising:

a voltage-controlled oscillator which includes at least one resonator circuit for driving the oscillator;

a phase-locked loop including frequency control means for controlling the output frequency of said oscillator, such that during operation said resonator circuit runs at a resonator frequency to drive said oscillator at an oscillator output frequency which is an integer multiple greater than one of the resonator frequency;

wherein the resonator frequency is coupled to the frequency control means of the phase-locked loop, wherein the resonator circuit includes at least one adjustable component to control the resonator frequency.

Welland fails to disclose each of the elements of claim 1. First, Applicant submits that Welland fails to disclose the use of a resonator circuit for driving the oscillator, as claimed in claim 1. Welland uses an LC tank oscillator having an external inductor to drive the voltage controlled oscillator.

Even if, *assuming arguendo*, that the LC tank circuit used in Welland can be equated to a resonator as claimed, Welland still fails to disclose the invention as claimed in claim 1.

One aspect of the claimed invention is to allow the phase-locked loop to operate with a voltage controlled oscillator having an output frequency higher than that which can be handled by the phase-locked loop frequency control means without requiring additional frequency divider circuitry in the feedback loop. Welland does not address this concern. The configuration of Welland is in accordance with the prior art as shown in Fig. 1 of the current application. In Welland, the output of the voltage controlled oscillator is subjected to a frequency divider circuit (214 of Fig. 2), and the output of this frequency divider circuit is coupled to the frequency control means of the phase-locked loop. This configuration is claimed in claim 1, and Welland fails to anticipate these elements.

Claim 1 recites a phase-locked loop including frequency control means for controlling the output frequency of said oscillator, such that during operation the resonator circuit runs at a resonator frequency to drive the oscillator at an oscillator output frequency which is an integer multiple greater than one of the resonator frequency. Claim 1 also recites that the resonator frequency is coupled to the frequency control means of the phase-locked loop. By using the resonator frequency instead of the output frequency of the voltage-controlled oscillator, no additional circuitry (in the form of a frequency divider or multiplier) is required.

Welland does not disclose using a resonator frequency to drive the voltage-controlled oscillator at an oscillator output frequency which is an integer multiple greater than one of the resonator frequency, as recited in claim 1. In Welland, the actual output of the voltage-controlled oscillator is supplied to a frequency divider circuit. The output signal of the voltage-controlled oscillator is not an integer multiple

greater than one of a resonator frequency. There is only one output in Welland. Clearly, since two outputs signal from the voltage-controlled oscillator are not present in Welland, a resonator frequency to drive said oscillator at an oscillator output frequency which is an integer multiple greater than one of the resonator frequency, as claimed in claim 1, is not taught. Thus, this feature is not anticipated by Welland.

Furthermore, Welland does not anticipate the element of claim 1 wherein the resonator frequency is coupled to the frequency control means of the phase-locked loop. In Welland, the output of the LC tank circuit is not coupled to the frequency control means of the phase-locked loop. The configuration of Welland is such that the output of the voltage controlled oscillator is coupled to a frequency divider circuit (divide by N counter 214 of Fig. 2 of Welland). Because the output of the LC tank circuit and the output of the voltage-controlled oscillator are the same (i.e., there is only one output in Welland), and by nature the frequency of this output is higher than that which can be accepted by the phase-locked loop, a divider circuit is necessary before coupling to the frequency control means of the phase-locked loop. The configuration taught in Welland is shown as prior art in Figure 1 of the Applicant's specification.

Welland does not teach the use of a resonator circuit, does not teach using a resonator frequency to drive the voltage-controlled oscillator at an oscillator output frequency which is an integer multiple greater than one of the resonator frequency, and does not teach coupling the resonator output to the frequency control means of the phase-locked loop. All of these elements are claimed in claim 1. Thus, clearly Welland does not anticipate claim 1. Claim 1, as amended, is patentable over Welland and in condition for allowance.

All of the remaining claims depend from claim 1. As a result, claims 2-9 are also in condition for allowance.

35 U.S.C. §103 Rejections

The Examiner has rejected claims 2-9 under 35 U.S.C. 103(a) as being unpatentable over Welland in view of U.S. Patent No. 6,268,778 B1 issued to Mucke et al. Claims 2-9, however, are all dependent upon claim 1. Mucke has been cited for reasons unrelated to the missing elements of claim 1, and therefore does not provide the necessary teaching lacking from Welland. Thus, claims 2-9 are in condition for allowance for the reasons as set forth above, and the rejections of claims 2-9 under 35 U.S.C. 103(a) are moot.

Conclusion

Pending Claims 1-9 are in condition for allowance. Applicant respectfully requests reconsideration and issuance of the subject application. If any issues remain that preclude issuance of this application, the Examiner is urged to contact the undersigned attorney before issuing a subsequent Action.

Respectfully Submitted,

Dated: 6-4-2003

By: 

Joseph Imhof
Reg. No. 41,863
(215) 923-4466



IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE

Applicant: Sun, Yanling.

Application No: 09/966,204

Filing Date: 09/28/2001

Attorney Docket No: SUN-2
(S&L P26,643 USA)

Title: Phase-Locked Loop Circuit as well as a
Voltage-Controlled Oscillator as Used in a
Phase-Locked Loop Circuit

Art Group: 2819

Examiner: John B. Nguyen

Commissioner for Patents
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Dorothy M. Musgreave

TRANSMITTAL LETTER TO OFFICIAL DRAFTSPERSON

Dear Official Draftsperson:

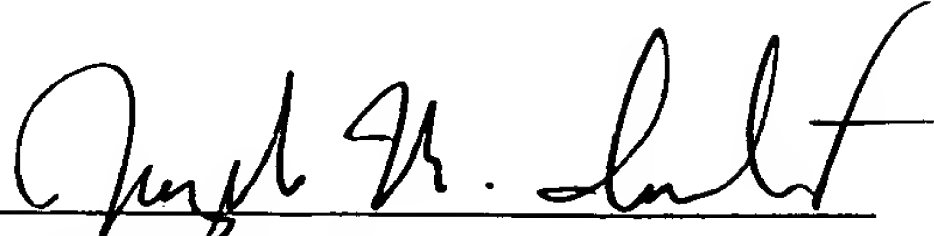
Applicants enclose herewith one (1) sheet of formal drawings (Figures 1, 2, and 3) relating to the above-identified patent application.

The following identifying indicia has been included in the top margin in accordance with 37 CFR §1.84 (c): the title, the inventor's name, and the application number.

Application No. 09/966,204
Attorney Docket No. P26,643 USA

Respectfully submitted,

Dated: August 21, 2003



Joseph M. Imhof
Registration No. 41,863

Synnestvedt & Lechner
2600 Aramark Tower
1101 Market Street
Philadelphia, PA 19107
Telephone: (215) 923-4466
Facsimile: (215) 923-2189

Enclosures

M:\Imhof\Agere\P26643 USA\formal drawings transmittal letter.wpd



1/1

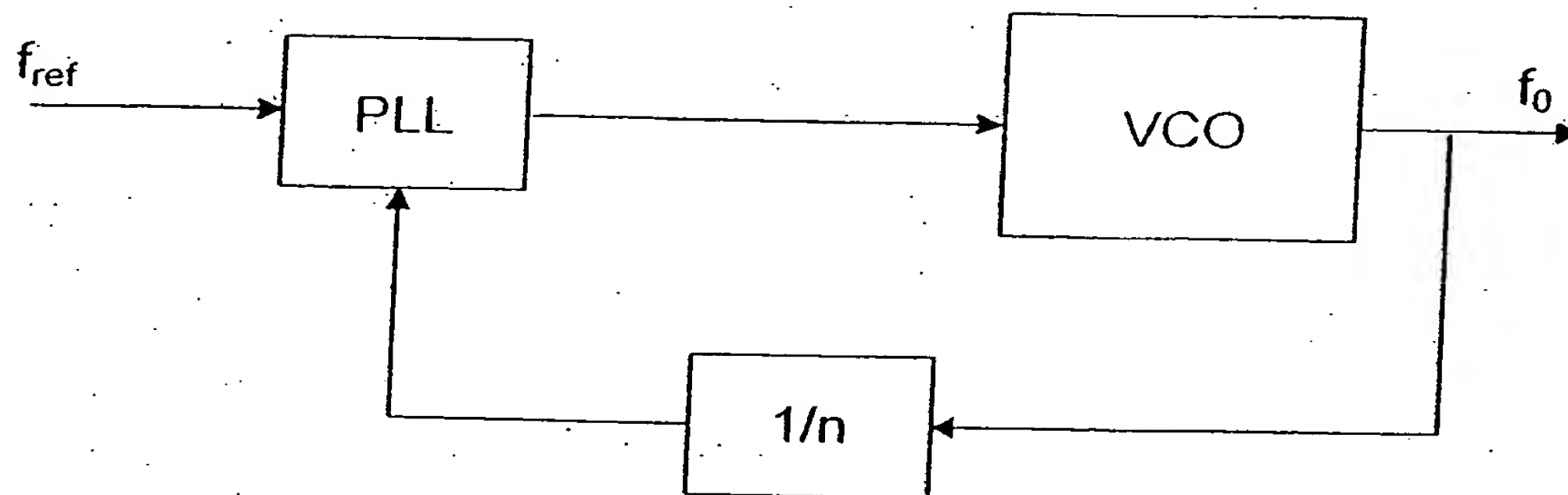


Fig. 1

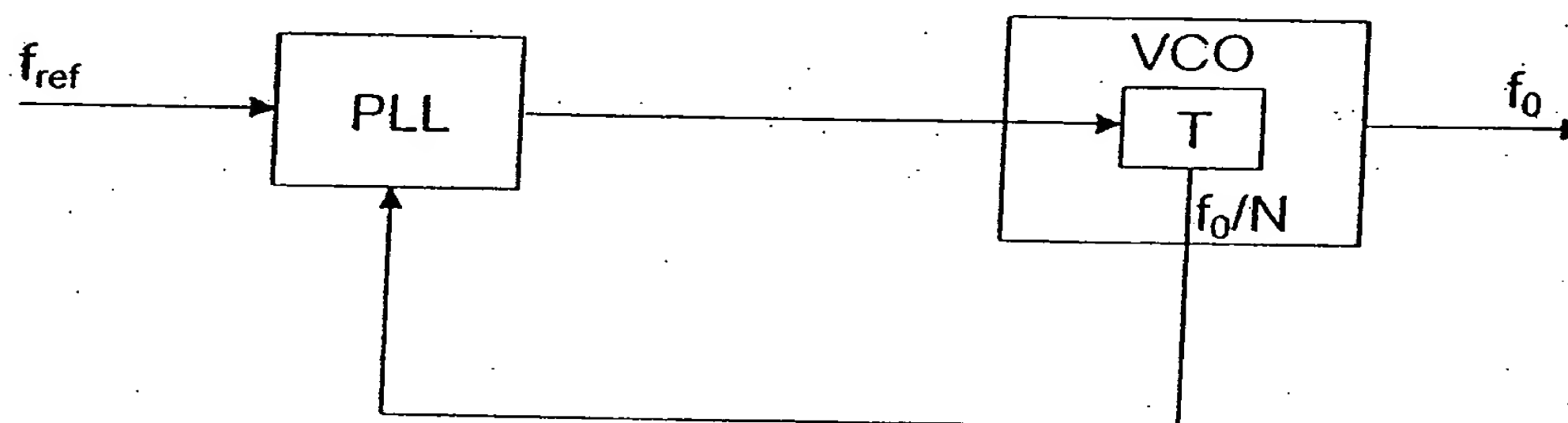


Fig. 2

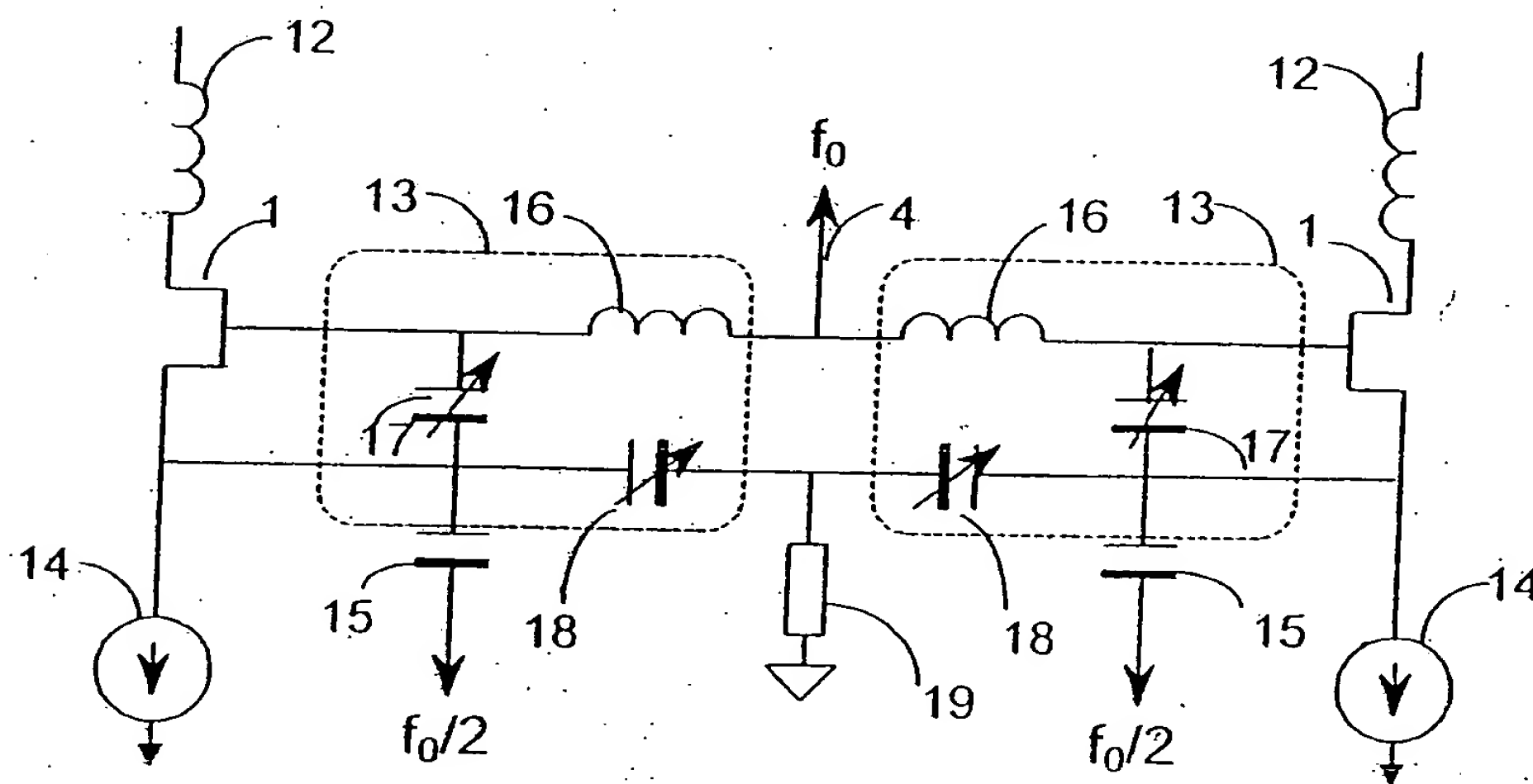


Fig. 3

REQUEST FOR CONTINUED EXAMINATION (RCE) TRANSMITTAL

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450



| | |
|------------------------|--------------------|
| Application Number | 09/966,204 |
| Filing Date | September 28, 2001 |
| First Named Inventor | Yanling Sun |
| Art Unit | 2819 |
| Examiner Name | John B. Nguyen |
| Attorney Docket Number | P26,643 USA |

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application

Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application. See Instruction Sheet for RCEs (not to be submitted to the USPTO) on page 2.

1. Submission required under 37 CFR 1.114

Note: If the RCE is proper, any previously filed unentered and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such

a. ☐ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

i. ☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____

ii. ☐ Other _____

b. ☒ Enclosed

i. ☐ Amendment/Reply

iii. ☒ Information Disclosure Statement (IDS)

ii. ☐ Affidavit(s)/Declaration(s)

iv. ☐ Other _____

2. Miscellaneous

a. ☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of _____ months (Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

b. ☐ Other _____

3. Fees

The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.

a. ☐ The Director is hereby authorized to charge the following fees, or credit any overpayments, to Deposit Account No. _____

i. ☐ RCE fee required under 37 CFR 1.17(e)

ii. ☐ Extension of time fee (37 CFR 1.136 and 1.17)

iii. ☐ Other _____

b. ☒ Check in the amount of \$ 770.00 enclosed

c. ☐ Payment by credit card (Form PTO-2038 enclosed)

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

Name (Print / Type)

Joseph M. Imhof

Registration No. (Attorney / Agent)

41,863

Signature

Date

October 2, 2003

CERTIFICATE OF MAILING OR TRANSMISSION

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Mail Stop RCE, Commissioner For Patents, P.O. Box 1450, Alexandria, VA 22313-1450 or facsimile transmitted to the U.S. Patent and Trademark Office on the date shown below.

Name (Print / Type)

Dorothy M. Musgreave

Signature

Date

October 2, 2003

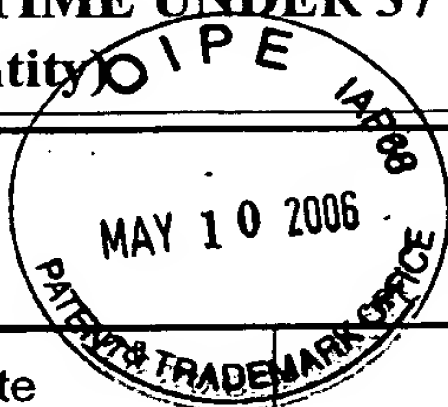
This collection of information is required by 37 CFR 1.114. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing the burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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PETITION FOR EXTENSION OF TIME UNDER 37 CFR 1.136(a)
(Large Entity)

Docket No.
Sun 2 (S&L 26,643 USA)

In Re Application Of: **Sun, Y.**



Serial No.
09/966,204

Filing Date
September 28, 2001

Examiner
John B. Nguyen

Group Art Unit
2819

Invention:

**PHASE-LOCKED LOOP CIRCUIT AS WELL AS A VOLTAGE-CONTROLLED OSCILLATOR
AS USED IN A PHASE-LOCKED LOOP CIRCUIT**

TO THE COMMISSIONER FOR PATENTS:

This is a request under the provisions of 37 CFR 1.136(a) to extend the period for filing a response to the Office Action of **December 4, 2002** above-identified application.
Date

The requested extension is as follows (check time period desired):

☐ One month ☐ Two months ☒ Three months ☐ Four months ☐ Five months

from: **December 4, 2002**
Date

until: **June 4, 2003**
Date

The fee for the extension of time is **\$930** and is to be paid as follows:

- ☒ A check in the amount of the fee is enclosed.
☐ The Director is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account No.
☐ If an additional extension of time is required, please consider this a petition therefor and charge any additional fees which may be required to Deposit Account No.

Signature

Dated: **June 4, 2003**

Joseph M. Imhof
Reg. No. 41,863
Synnestvedt & Lechner LLP
2600 Aramark Tower
1101 Market Street
Philadelphia, PA 19107
(215) 923-4466

I certify that this document and fee is being deposited on **June 4, 2003** with the U.S. Postal Service as first class mail under 37 C.F.R. 1.8 and is addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Signature of Person Mailing Correspondence

Dorothy M. Musgreave

Typed or Printed Name of Person Mailing Correspondence

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